AXIOMTEK

SBC84710 Series

**VIA Eden/C7 All-in-One
Capa Board
with DualView display**

User's Manual

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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.

- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.

- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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MEMO

C h a p t e r 1
Introduction

The **SBC84710** is a VIA V4 Eden/C3/C7 CPU equipped Capa board with graphics, Fast Ethernet and audio interface. Designed with the space-limited applications in mind, using a standardized format conforming to the size of a 3.5" Hard Disk drive, **SBC84710 Series** adapt a VIA V4 microprocessors. To simplify system integration, it packs provisions such as super I/Os, UXGA, LCD, Ethernet, solid state disk, all on a single board. Unique embedded features such as 4 serial ports (3 x RS-232, 1 x RS-232/422/485) with +5V/12V power capability and that allow adoption of an extensive array of PC peripherals. The industrial-grade construction of **SBC84710 series** allows your system to endure the continuous operation in hostile environments where stability and reliability are basic requirements. System dependability of **SBC84710 series** are enhanced by its built-in watchdog timer, a special industrial feature not commonly seen on other motherboards.

Designed for the professional embedded VIA developers, embedded

board **SBC84710 Series** is virtually the ultimate one-step solution for embedded system applications.

1.1 Specifications

● **CPU:** VIA V4 Eden 600M/1GHZ

● **System Chipset:** VIA CX700

● **Bus Clock:** 400/533MHz

● **BIOS:**
   ■ Phoenix-Award BIOS, Y2K compliant
   ■ 4Mbit Flash, DMI, Plug and Play
   ■ SmartView for multiple LCD type selection, display mode option and application extension features
   ■ RPL/PXE Ethernet Boot ROM
   ■ "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail

● **System Memory:**
   ■ One 200-Pin DDR-2 SODIMM socket
   ■ Maximum DDR of up to 1GB DDR2-533

● **L2 Cache: I**ntegrated in CPU

● **Onboard IDE:**
   ■ 1 parallel ATA-133
   ■ PATA-100 as PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33/66/100
   ■ 1*SATA-150

● **Compact Flash Socket:**
   ■ One Compact Flash Type II Socket

● **Onboard Multi I/O:**
   ■ One floppy port
   ■ 3 x RS-232
     1 x RS-232/422/485

● **USB Interface:** 6*ports of USB 2.0 with double deck USB connector and 2*10-pin 2.0 pitch wafer connectors

- **Real Time Clock:** with battery backup
- **Watchdog Timer:**
  - 1~255 seconds; up to 255 levels
- **Graphics/Streaming:**
  - Integrate VIA CX700
  - Single display mode maximum resolutions:
    - ◆ CRT: 2048 x 1536@ 75Hz
    - ◆ LVDS LCD: 1600 x 1200
  - DualView display mode:
    - ◆ CRT: 2048 x 1536@ 75Hz
    - ◆ LVDS LCD: 1600 x 1200
  - LCD backlight control supported

- **Ethernet:**
  - Realtek 8100BL PCI Bus 10/100M Base-T
  - Wake On LAN (via ATX power supply)
  - Equipped with RJ-45 interface

- **Audio:**
  - Realtek AC'97 codec audio
  - Amplify for speaker-out with 2.5W for each channel
  - MIC-in, Line-in, Line-out/Speaker-out (jumper selectable)

- **Power Management:** ACPI (Advanced Configuration and Power Interface)

● **Form Factor:** 3.5" hard disk drive form factor

NOTE: *All specifications and images are subject to change without notice.*

1.2 Utilities Supported

- ● Chipset Driver
- ● Ethernet Driver
- ● VGA Drivers
- ● Audio Drivers

C h a p t e r 2
Jumpers and Connectors

2.1 Board Layout and Fixing Holes

Component Side

29.46

70.03
78.77

104.65

32.66

59.67

47.50   19.05

144.25

146.05
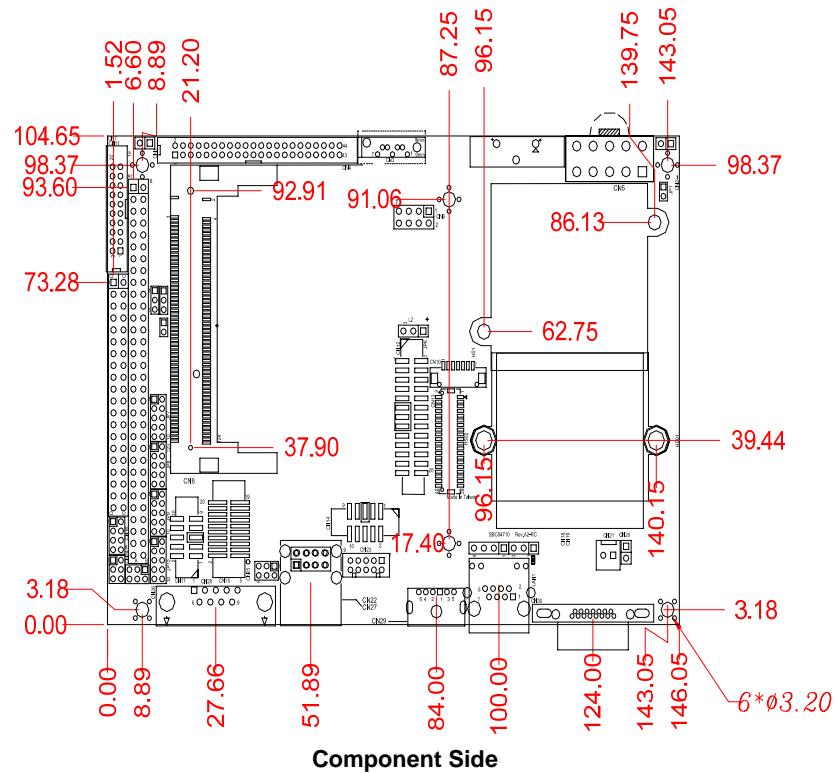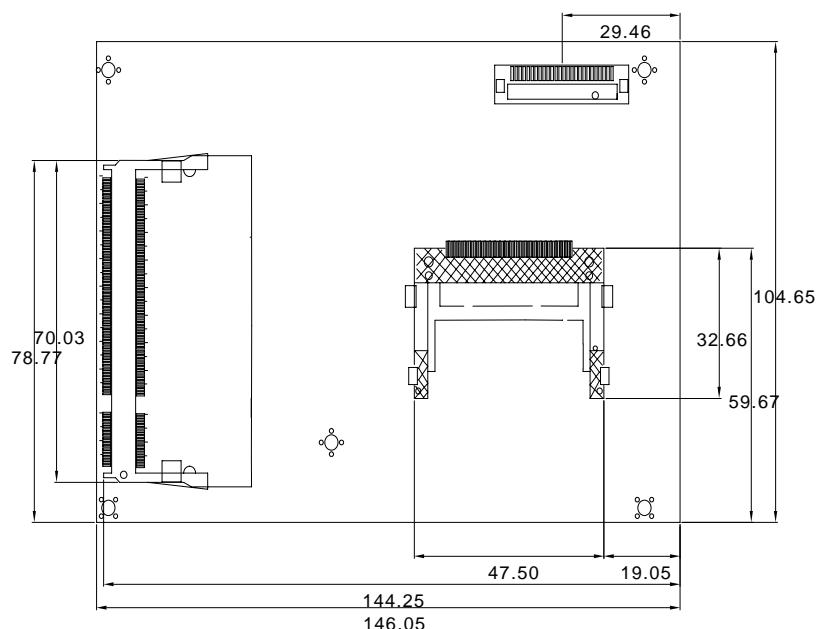
Solder Side

2.2   Placement

Component Side
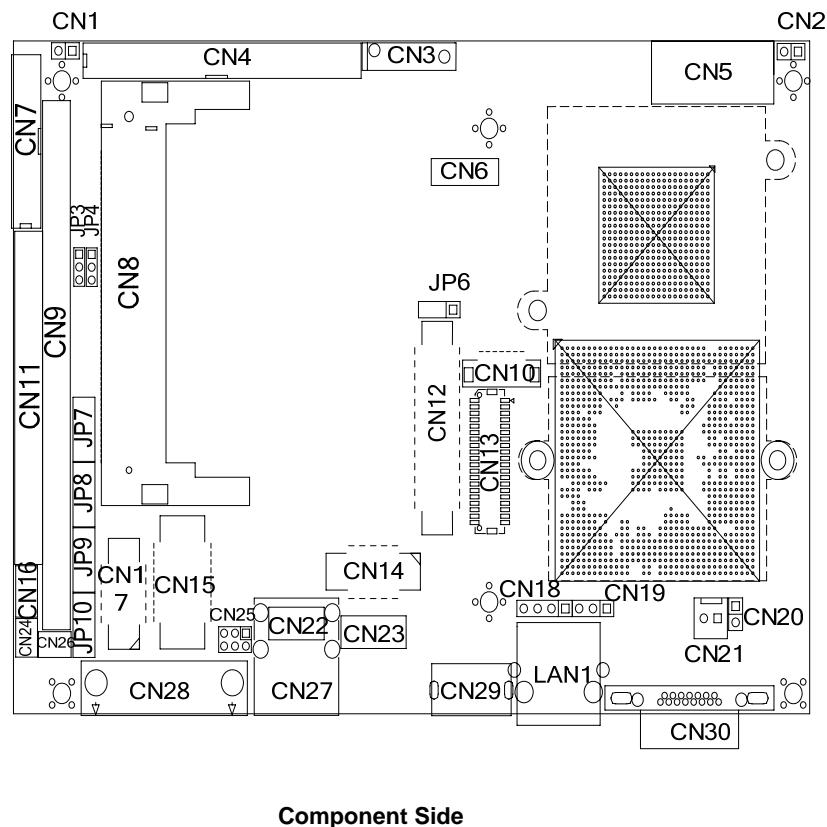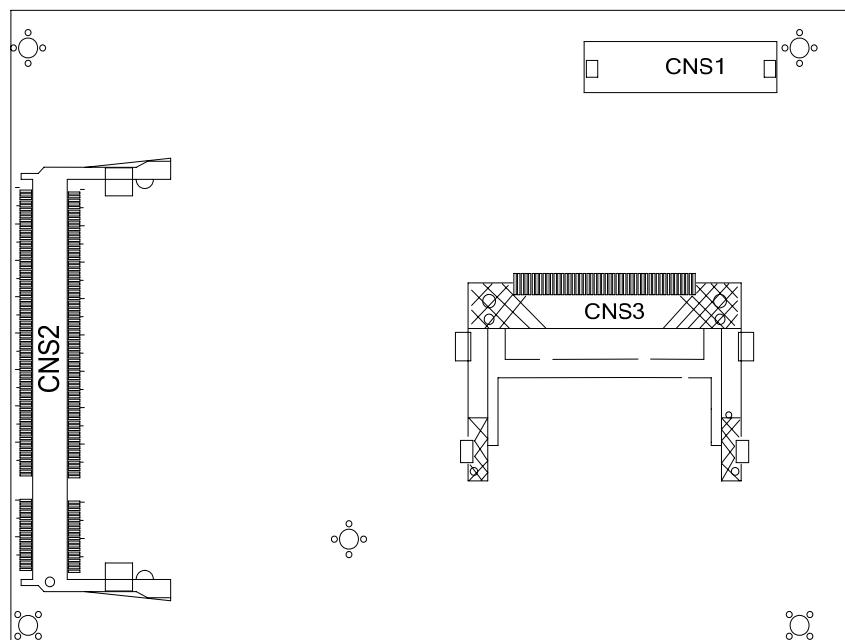
Solder Side

2.3   Jumper Settings

The **SBC84710 Series** is configured to match the needs of your application with the proper jumper settings. The table below is a summary of all the jumpers and their corresponding functions onboard the **SBC84710 Series**. The succeeding tables show the correct jumper settings for the onboard devices.

SBC84710 Jumper setting：

Jumper	Default Setting		Jumper Setting
JP3	Normal Operation/Clear CMOS setting Default: Normal Operation		Short 1-2
JP4	Compact Flash Voltage Selection Default: 5V		Short 1-2
JP6	LVDS Voltage Selection Default: 3.3V		Short 1-2
JP7	COM4 Mode Select	COM4 Pin 11: DCD	Short 7-9
		COM4 Pin 18: RI	Short 8-10
JP8	COM3 Mode Select	COM3 Pin 1: DCD	Short 7-9
		COM3 Pin 8: RI	Short 8-10
JP9	COM2 Mode Select	COM2 Pin 1: DCD	Short 7-9
		COM2 Pin 8: RI	Short 8-10
JP10	COM1 Mode Select	COM1 Pin 1: DCD	Short 7-9
		COM1 Pin 9: RI	Short 8-10
CN16	COM1 Mode Select Default: RS-232		Short 1-2
CN24	COM1 Mode Select Default: RS-232		Short 3-5,4-6
CN26	COM1 Mode Select Default: RS-232		Short 3-5,4-6
CN25	Audio Speak Out/Line Out Selection Default: Line Out		Short 1-3,2-4

2.3.1 CMOS Clear Jumper: JP3

Options	Settings
Normal	Short 1-2 (default)
Clear CMOS	Short 2-3

JP3

2.3.2 Compact Flash Voltage Selection: JP4

Options	Settings
3.3V	Short 1-2 (default)
5V	Short 2-3

JP4

2.3.3 LVDS Voltage Selection: JP6

Options	Settings
3.3V	Short 1-2 (default)
5V	Short 2-3

JP6
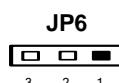
2.3.4 COM1.COM2.COM3.COM4 Mode: JP7.JP8.JP9.JP10

COM1 (CN28)	JP10
Pin 1=5V	Short 1-3
Pin 1=12V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9
Pin 9=5V	Short 2-4
Pin 9=12V	Short 4-6 or 6-8
*Pin 9=RI	Short 8-10

COM2 (CN15)	JP9
Pin 1=5V	Short 1-3
Pin 1=12V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9
Pin 8=5V	Short 2-4
Pin 8=12V	Short 4-6 or 6-8
*Pin 8=RI	Short 8-10

COM3 (CN17)	JP8
Pin 1=5V	Short 1-3
Pin 1=12V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9
Pin 8=5V	Short 2-4
Pin 8=12V	Short 4-6 or 6-8
*Pin 8=RI	Short 8-10

COM4 (CN15)	JP7
Pin 11=5V	Short 1-3
Pin 11=12V	Short 3-5 or 5-7
*Pin 11=DCD	Short 7-9
Pin 18=5V	Short 2-4
Pin 18=12V	Short 4-6 or 6-8
*Pin 18=RI	Short 8-10

Default settings
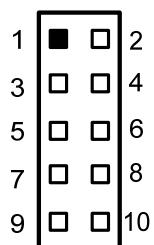
2.3.5 COM1 Mode: CN26

Options	Settings
RS-422 Or RS-485	Short 1-3,2-4
RS-232	Short 3-5,4-6(default)

CN26
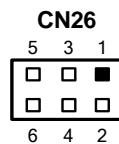
2.3.6 COM1 Mode: CN24

Options	Settings
RS-422 Or RS-485	Short 1-3,2-4
RS-232	Short 3-5,4-6(default)

CN24
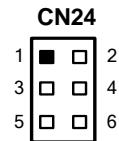
2.3.7 COM1 Mode: CN16

Options	Settings
RS-232	Short 1-2 (default)
RS-422	Short 3-4,7-8
RS-485	Short 5-6,7-8

CN16

2.3.8 Audio Output Selection: CN25

Options	Settings
Line-out	Short 1-3,2-4(default)
Speak-out	Short 3-5,4-6

CN25

2.4 Connectors

The connectors allow the CPU card to connect with other parts of the system. Some problems encountered by your system may be a result from loose or improper connections. Ensure that all connectors are in place and firmly attached. The following table lists the function of each connector on the **SBC84710 Series**.

Connectors	Label
HDD Activity LED Connector	CN1
System Reset Switch Connector	CN2
SATA Connector	CN3
Primary IDE Connector	CN4
Power Connector	CN5
+12V Only	CN6
2*10pin DIO	CN7
Mini PCI Slot	CN8
PC104-A	CN9
LVDS Backlight Connector	CN10
PC104-B	CN11
Printer Port Connector (LPT)	CN12

Connectors	Label
LVDS Connector	CN13
Audio Connector	CN14
COM2,COM4 Connector	CN15
COM3 Connector	CN17
Front Panel Connector (Buzzer)	CN18
Front Panel Connector (Power LED)	CN19
Power Button	CN20
CPU Fan Connector	CN21
USB2,USB3 Connector	CN23
USB0,USB1 Connector	CN27
COM1Connector	CN28
PS/2 Connector	CN29
VGA Connector	CN30
F.D.D Connector	CNS1
DDR RAM Connector	CNS2
CF Connector	CNS3
Ethernet Connector	LAN1

-- End of Connectors Table --

2.4.1 Flat Panel Bezel Connectors: CN1.CN2.CN18.CN19

■ **Power LED: CN19**

This 2-pin connector, designated at *Pins 1* and *2.3,* connects the system power LED indicator to its respective switch on the case. *Pin 1* is +, and *pin 2.3,* is assigned as -. The Power LED lights up when the system is powered ON.

■ **External Speaker and Internal Buzzer Connector: CN18**

Pin 1, 2, 3, and *4 of CN18* connect to the case-mounted speaker unit or internal buzzer. *Short pin 2-3* when connecting the CPU card to an internal buzzer. When connecting an external speaker, set these jumpers to *Open* and install the speaker cable on *pin 4* (-) and *pin 1* (+).

■ **System Reset Switch: CN2**

Pins 1 & *2* of *CN2* connect to the case-mounted reset switch and allow rebooting of your computer instead of turning OFF the power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

■ **HDD Activity LED: CN1**

This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. *Pins 1 & 2 of CN1* connect to the hard disk drive and the front panel HDD LED. *Pins 2* is -, and *pin 1* is assigned as +.

2.4.2 SATA Connector: CN3

The SATA connector is are for high-speed SATA interface ports and it can be connected to hard disk devices.

PIN	Description
1	GND
2	STXP
3	STXN
4	GND
5	SRXN
6	SRXP
7	GND

CN3
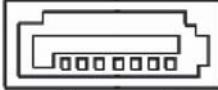
2.4.3 IDE Interface Connector: CN4

The **SBC84710** is built in 1 channel to support 2 IDE drives. IDE1 (44PIN):

IDE1 Connector Pin Assignment

Pin	Description	Pin	Description	Pin	Description
1	Reset #	2	GND	3	Data 7
4	Data 8	5	Data 6	6	Data 9
7	Data 5	8	Data 10	9	Data 4
10	Data 11	11	Data 3	12	Data 12
13	Data 2	14	Data 13	15	Data 1

Pin	Description	Pin	Description	Pin	Description
16	Data 14	17	Data 0	18	Data 15
19	GND	20	N.C.	21	DREQ
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IORDY
28	Pull down	29	DACK#	30	GND
31	IRQ	32	N.C.	33	SA1
34	PDIAG	35	SA0	36	SA2
37	CS1 #	38	CS3 #	39	Active #
40	GND	41	VCC	42	VCC
43	GND	44	N.C.		

-- End of IDE Interface Connector (IDE1) Table --

2.4.4 Power Connector: CN5

Pin	Signal	Pin	Signal
1	PS_ON	2	GND
3	GND	4	+12V
5	N.C.	6	+SB5V
7	+5V	8	+5V
9	-12V	10	GND

CN5

2.4.5 DIO Connector: CN7

Pin	Signal	Pin	Signal
1	Out-0	2	In-0
3	Out-1	4	In-1
5	Out-2	6	In-2
7	Out-3	8	In-3
9	Out-4	10	In-4
11	Out-5	12	In-5
13	Out-6	14	In-6
15	Out-7	16	In-7
17	GND	18	GND
19	N.C	20	N.C

CN7
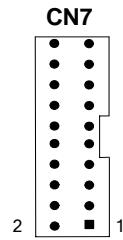
2.4.5.1 Digital I/O Software Programming

The Digital I/O on the the board is not an isolated type.

Output	Address	Bit	Output	Address	Bit
Out-0	123h	0	In-0	123h	0
Out-1	123h	1	In-1	123h	1
Out-2	123h	2	In-2	123h	2
Out-3	123h	3	In-3	123h	3
Out-4	123h	4	In-4	123h	4
Out-5	123h	5	In-5	123h	5
Out-6	123h	6	In-6	123h	6
Out-7	123h	7	In-7	123h	7

Example program;

Out 123h, 03h	Out-0, Out-1	Turn On
	Out-2~Out-7	Turn Off
Out 123h, 0Ah	Out-0, Out-2	Turn Off
	Out-1, Out-3	Turn On
	Out-4~Out-7	Turn Off

Example program;

If INPUT 123 is (1011), then INPUT-2 is "0"

If INPUT 123 is (1100), then INPUT-0 & 1 are "0"

** The INPUT signal has to be TTL signal

2.4.6 PC/104 Bus: CN9

The PC/104 is an industrial standard. It is a compact form factor with dimensions of 3.6" x 3.8" and is fully compatible with the ISA Bus. The PC/104 interface is able to adapt the off -shelf PC/104 modules, such as sound module, fax modem module and multi-I/O module…etc.

Pin	Pin Name	Pin	Pin Name	Pin	Pin Name	Pin	Pin Name
1	IOCHCHK*	2	0V	3	SD7	4	RESETDRV
5	SD6	6	+5V	7	SD5	8	IRQ9
9	SD4	10	-5V	11	SD3	12	DRQ2
13	SD2	14	-12V	15	SD1	16	ENDXFR*
17	SD0	18	+12V	19	IOCHRDY	20	(KEY)
21	AEN	22	SMEMW*	23	SA19	24	SMEMR*

Pin	Pin Name	Pin	Pin Name	Pin	Pin Name	Pin	Pin Name
25	SA18	26	IOW*	27	SA17	28	IOR *
29	SA16	30	DACK3*	31	SA15	32	DRQ3
33	SA14	34	DACK1*	35	SA13	36	DRQ1
37	SA12	38	REFRESH*	39	SA11	40	SYSCLK
41	SA10	42	IRQ7	43	SA9	44	IRQ6
45	SA8	46	IRQ5	47	SA7	48	IRQ4
49	SA6	50	IRQ3	51	SA5	52	DACK2*
53	SA4	54	TC	55	SA3	56	SALE
57	SA2	58	+5V	59	SA1	60	OSC
61	SA0	62	0V	63	0V	64	0V

-- End of PC/104 Bus (CN9) Table --

2.4.7 LVDS Backlight Connector: CN10

PIN	Description
1	12V
2	12V
3	5V
4	ENABLEI
5	GND
6	GND
7	GND

2.4.8 PC/104 Bus: CN11

Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name
1	0V	2	0V	3	MEMCS16*	4	SBHE*
5	IOCS16*	6	LA23	7	IRQ10	8	LA22
9	IRQ11	10	LA21	11	IRQ12	12	LA20
13	IRQ15	14	LA19	15	IRQ14	16	LA18
17	DACK0*	18	LA17	19	DRQ0	20	MEMR*
21	DACK5*	22	MEMW*	23	DRQ5	24	SD8
25	DACK6*	26	SD9	27	DRQ6	28	SD10
29	DACK7*	30	SD11	31	DRQ7	32	SD12

Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name	Pin#	Pin Name
33	+5V	34	SD13	35	MASTER*	36	SD14
37	0V	38	SD15	39	0V	40	(KEY)

-- End of PC/104 Bus (CN11) Table --

2.4.9 Parallel Port Interface: CN12

The **SBC84710** onboard **LPT** is multi-mode parallel port able to support:

- **Standard mode:** IBM PC/XT, PC/AT and PS/2^{TM} compatible with bi-directional parallel port

- **Enhanced mode:** Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)

- **High speed mode:** Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

The address select of the onboard parallel port in LPT1 (378H) or disabled is done by BIOS CMOS setup.

Pin	Description	Pin	Description
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	No connector

CN12

2.4.10   LVDS Flat Panel Connector: CN13

The LVDS interface which is with 40-pin connector supports 18/24-bit single/dual channel type of LCD.

Pin	Deception	Pin	Deception
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND
41	N.C.	38	N.C.
43	N.C.	40	N.C.

Remark: The LVDS connector on the SBC is a 40-pin connector.
The matching connector is strongly recommended to use JST SHDR-40V-S-B.
The 7-pin inverter connector on the SBC is with Hirose connector.
The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

2.4.11 Audio Connector: CN14

The **SBC84710** supports audio interface.**CN14** is a 10pin-header connector commonly used for the audio.

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND

CN14

```
      CN14
1  [■ □]  2
3  [□ □]  4
5  [□ □]  6
7  [□ □]  8
9  [□ □] 10
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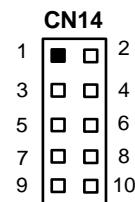
2.4.12 Serial Port Interface: CN28 (COM1), CN15 (COM2) (COM4), CN17(COM3)

The **SBC84710** has four onboard serial ports and have +5V/12V power on pins 1 and 8 or pin 9, depending on jumper selection. **COM1** is standard DB9 connectors. **COM2.COM3.COM4** are the combo connectors. The pin assignments are listed below:

COM1	Description
1	Data Carrier Detect (DCD)
6	Data Set Ready (DSR)
2	Receive Data (RXD)
7	Request to Send (RTS)
3	Transmit Data (TXD)
8	Clear to Send (CTS)
4	Data Terminal Ready (DTR)
9	Ring Indicator (RI)
5	Ground (GND)

CN28
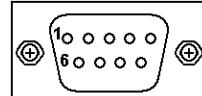
COM2/COM4	Description
1	Data Carrier Detect (DCD2)
2	Data Set Ready (DSR2)
3	Receive Data (RXD2)
4	Request to Send (RTS2)
5	Transmit Data (TXD2)
6	Clear to Send (CTS2)
7	Data Terminal Ready (DTR2)
8	Ring Indicator (RI2)
9	Ground (GND)
10	N.C.
11	Data Carrier Detect (DCD4)
12	Data Set Ready (DSR4)
13	Receive Data (RXD4)
14	Request to Send (RTS4)
15	Transmit Data (TXD4)
16	Clear to Send (CTS4)
17	Data Terminal Ready (DTR4)
18	Ring Indicator (RI2)
19	Ground (GND)
20	N.C.

CN15
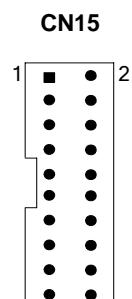
COM3	Description
1	Data Carrier Detect (DCD)
2	Data Set Ready (DSR)
3	Receive Data (RXD)
4	Request to Send (RTS)
5	Transmit Data (TXD)
6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)
8	Ring Indicator (RI)
9	Ground (GND)
10	N.C.

CN17
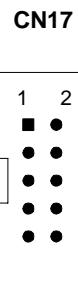
2.4.13 Power Button: CN20

This 2-pin connector connects the ATX power button of the front panel to the **SBC84710** CPU card - allowing user to control the power on/off state of the ATX power supply.

2.4.14 CPU Fan Connector: CN21

CN21 is a CPU fan connector. All CPUs require a fan for heat dispensing. The fan connector on **SBC84710** provides power to the fan.

Pin	Description
1	GND
2	+5V

CN21

1　　2
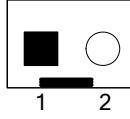
2.4.15 USB Connector: CN23

The Universal Serial Bus (USB) connector on the **SBC84710** is for installation of peripherals supporting the USB interface. **CN23** is 10-pin standard USB connector.

USB2 and USB3

Pin	Description	Pin	Description
1	VCC	2	VCC
3	D2-	4	D3-
5	D2+	6	D3+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)

CN23
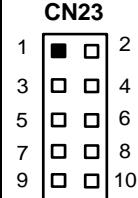
2.4.16 USB Connector: CN27

The Universal Serial Bus (USB) connector on the **SBC84710** is for installation of peripherals supporting the USB interface. **CN27** is 12-pin standard USB connector.

USB0 and USB1

Pin	Description	Pin	Description
1	VCC	2	VCC
3	D0-	4	D1-
5	D0+	6	D1+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)
11	Ground (GND)	12	Ground (GND)

CN27

```
1  ■ □  2
3  □ □  4
5  □ □  6
7  □ □  8
9  □ □  10
```

2.4.17 Keyboard and PS/2 Mouse Connector: CN29

The **SBC84710 CN29** is a DIN connector (AC97) for PS/2 Mouse and PS/2 keyboard connection.

Pin	Description
1	Keyboard Data
2	Mouse Data
3	GND
4	VCC
5	Keyboard Clock
6	Mouse Clock

CN29

Mouse Clock — Keyboard Clock
VCC — GND
Mouse Data — Keyboard Data
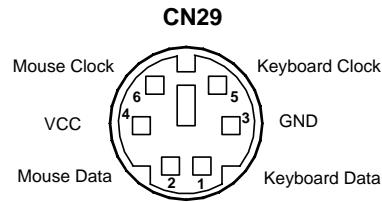
2.4.18 VGA Connector: CN30

CN30 is a standard 15-pin pin DB15 connector commonly used for the CRT VGA display.

Pin	Description	Pin	Description	Pin	Description
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	AGND
7	AGND	8	AGND	9	N/A
10	GND	11	N/A	12	DDC DAT
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

2.4.19 Ethernet Connector: LAN1

The RJ-45 connector is used for Ethernet. To connect the **SBC84710** to 10-Base-T or 100-Base-T hub, just plug one end of the cable into the **LAN1** and connect the other end (phone jack) of the cable to a 10-Base-T hub or 100-Base-T hub.

Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 100 base T-Only)
5	RJ-1(For 100 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 100 base T-Only)
8	RJ-1(For 100 base T-Only)
A	Active LED
B	100/1000 LAN LED

LAN1
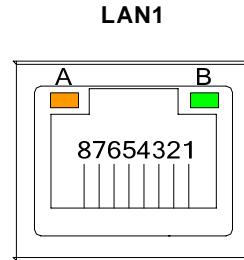
2.4.20 Compact Flash Connector: CNS3

The **SBC84710** is equipped with a Compact Flash disk type-II socket on the solder side and it supports the IDE interface Compact Flash disk card with DMA mode supported. The socket itself is especially designed to prevent any incorrect installation of the Compact Flash disk card.

CN33
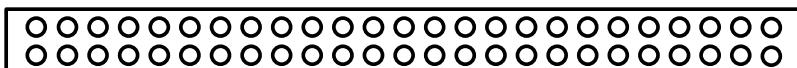
Pin	Description	Pin	Description
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND

2.4.21 Floppy Disk Controller: CNS1

The **SBC84710** provides a 26-pin FCC Z.I.F. type connector, **CN31** for support of a single floppy drives. The floppy drive could be any one of the following types: 3.5" 720KB or 1.44MB/2.88MB.

Pin	Description	Pin	Description
1	+5V	14	STEP
2	INDEX	15	GND

Pin	Description	Pin	Description
3	+5V	16	WDATA
4	DRIVE0	17	GND
5	+5V	18	WGATE
6	DSKCHG	19	GND
7	No connector	20	TRK0
8	READY	21	GND
9	HDOUT	22	WPT
10	MOTOR ON	23	GND
11	No connector	24	RDATA
12	DIR	25	GND
13	HDSEL	26	SIDE0

-- End of Floppy Disk Controller (CNS1) Table --

C h a p t e r 3
Hardware Description

3.1 Microprocessors

The **SBC84710 Series** supports VIA V4 architecture CPUs. Systems based on these CPUs can be operated under Windows 2000/XP and Linux environments. The system performance depends on the microprocessor installed onboard. Make sure all settings are correct for the installed microprocessor to prevent any damage to the CPU.

3.2 BIOS

System BIOS used on the **SBC84710 Series** is Phoenix-Award Plug and Play BIOS. The **SBC84710 Series** contains a single 4Mbit Flash.

3.3 System Memory

The **SBC84710 Series** industrial CPU card supports one 200-pin DDRII SODIMM socket for a maximum memory of 1GB DDR SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB and 1GB.

3.4   I/O Port Address Map

The VIA V4 architecture CPUs communicates via I/O ports. It has a total of 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-00F	Direct memory access controller
000-CF7	PCI bus
010-01F	Motherboard resources
020-021	Programmable interrupt controller
022-03F	Motherboard resources
040-043	System timer
044-05F	Motherboard resources
060	Standard 101/102-Key or Microsoft PS/2 Keyboard
061	System speaker
062-063	Motherboard resources
064	Standard 101/102-Key or Microsoft PS/2 Keyboard
065-06F	Motherboard resources
070-073	System CMOS/real time clock
074-07F	Motherboard resources
080-090	Direct memory access controller
091-093	Motherboard resources
094-09F	Direct memory access controller
0A0-0A1	Programmable interrupt controller
0A2-0BF	Motherboard resources
0C0-0DF	Direct memory access controller
0E0-0EF	Motherboard resources
0F0-0FF	Numeric data processor
170-177	Secondary IDE Channel
1F0-1F7	Primary IDE Channel
274-277	ISAPNP Read Data Port
279	ISAPNP Read Data Port
2E8-2EF	Communications Port (COM4)
2F8-2FF	Communications Port (COM2)
376	Secondary IDE Channel

Address	Devices
378-37F	Printer Port (LPT1)
3B0-3BB	VIA CPU to AGP Controller
3B0-3BB	VIA/S3G UniChrome Pro II IGP
3C0-3DF	VIA CPU to AGP Controller
3C0-3DF	VIA/S3G UniChrome Pro II IGP
3E8-3EF	Communications Port (COM3)
3F2-3F5	Standard floppy disk controller
3F6	Primary IDE Channel
3F7	Standard floppy disk controller
3F8-3FF	Communications Port (COM1)

-- End of I/O Port Address Map Table –

3.5 Interrupt Controller

The **SBC84710 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines. Four out of the sixteen can either be programmable. The mapping list of the 16 interrupt request lines is shown on the following table.

NMI	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	Reserved
IRQ6	Floppy disk controller
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	Reserved
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE Channel

C h a p t e r   4
Award BIOS Utility

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

4.1   Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

<div align="center">TO ENTER SETUP PRESS DEL KEY</div>

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

4.2   Control Keys

Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.3   Getting Help

● **Main Menu**
The online description of the highlighted setup function is displayed at the bottom of the screen.

● **Status Page Setup Menu/Option Page Setup Menu**
Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.
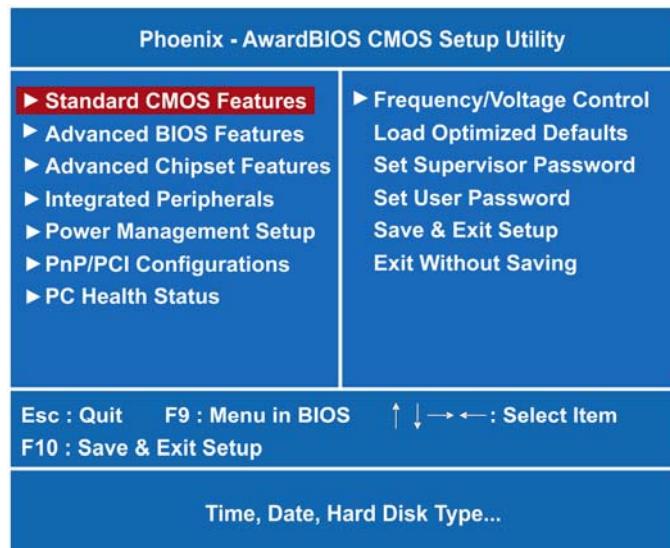
NOTE: *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.5 Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Standard CMOS Features
                                                    Item Help
   Date (mm:dd:yy)        Fri, Jul 9 1999      Menu Level ▶
   Time (hh:mm:ss)        11 : 27 : 51
                                               Change the day, month,
                                               year and century.
 ▶ IDE Channel 0 Master
 ▶ IDE Channel 0 Slave
 ▶ IDE Channel 1 Master
 ▶ IDE Channel 1 Slave    None
   Drive A                None
   Video                  EGA/VGA
   Halt On                [A1, But Diskette]

   Base Memory            640K
   Extended Memory        64512K
   Total Memory           65536K

 ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **Date**

day	It is determined by the BIOS and read only, from Sunday to Saturday.
date	It can be keyed with the numerical/ function key, from 1 to 31.
month	It is from January to December.
year	It shows the current year of BIOS.

● **Time**
This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

● **IDE Channel 0 Master/IDE Channel 0 Slave/IDE Channel 1 Master/IDE Channel 1 Salve**

These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.

If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the HDD interface controller supports ESDI, select "Type 1".
If the HDD interface controller supports SCSI, select "None".
If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

If there is no hard disk drive installed, select NONE and press <Enter>.

● **Halt On**

This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.

All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

4.6   Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced BIOS Features

► Hard Disk Boot Priority       [Press Enter]      Item Help
  CPU L1 & L2 Cache             [Enabled]       Menu Level ►
  CPU L3 Cache                  [Enabled]       Select Hard Disk Boot
  CPU L2 Cache ECC Checking     [Enabled]       Device Priority
  Quick Power On Shelf Test     [Enabled]
  First Boot Device             [CDROM]
  Second Boot Device            [Hard Disk]
  Third Boot Device             [LS120]
  Boot Other Device             [Enabled]
  Boot Up Floppy Seek           [Disabled]
  Boot Up NumLock Status        [On]
  Typematic Rate Setting        [Disabled]
X Typematic Rate (Chars/Sec)    6
X Typematic Delay (Msec)        250
  Security Option               [Setup]
  APIC Mode                     [Enabled]
  MPS Version Control For OS     [1.4]
  Video BIOS Shadow             [Enabled]
  Small Logo <EPA> Show         [Enabled]

↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **Hard Disk Boot Priority**

Scroll to this item and press <Enter> to view the Hard Disk Boot Priority sub menu for selecting boot device priority.

```
        Phoenix - AwardBIOS CMOS Setup Utility
                Hard Disk Boot Priority

  1. Pri. Master  :                      │      Item Help
  2. Pri. Slave   :                      │  Menu Level ►
  3. Sec. Master  :                      │
  4. Sec. Slave   :                      │  Use <↑> or <↓> to select
  5. US BHDD0     :                      │  a device, then press <+>
  6. USBHDD1      :                      │  to move it up, or <-> to
  7. USBHDD2      :                      │  move it down the list.
  8. Bootable Add-in Cards               │  Press <ESC> to exit this
                                         │  menu.



  ↑↓:Move   PU/PD/+/-:Change Priority    F10:Save     ESC:Exit
      F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Press <Esc> to return to the Advanced BIOS Features page.

● **CPU L1 & L2 Cache**
These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs without built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

● **CPU L3 Cache**
Use this item to enable L3 cache only for the CPUs with such a function.

● **CPU L2 Cache ECC Checking**
When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is *"Enabled"*.

● **Quick Power On Self Test**
This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

● **First/Second/Third Boot Device**
These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

● **Boot Other Device**
This item allows users to enable or disable the boot device not listed in the First/Second/Third boot devices option above. The default setting is "*Enabled"*.

● **Boot Up Floppy Seek**
During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks. The 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Please be noted BIOS can not differentiate 720K, 1.2M or 1.44M drive type as they all are 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the installed drive is 360K.

● **Boot Up NumLock Status**
Set the the Num Lock status when the system is powered on. The default value is *"On"*.

● **Typematic Rate Setting**
This item determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Typematic Rate Setting

Enabled	Enable typematic rate and typematic delay programming.
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items, controlled by keyboard.

● **Typematic Rate (Chars/Sec)**
  This option refers to character numbers typed per second by the keyboard. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

● **Typematic Delay (Msec)**
  This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

● **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

| System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

NOTE: *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

● **APIC Mode**
  Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.

● **MPS Version Control For OS**
  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

● **Video BIOS Shadow**
  Enable this parameter to turn on BIOS ROM shadowing for the block of memory normally used for standard VGA video ROM code.

● **Small Logo(EPA) Show**
  If enabled, the EPA logo will appear during system booting up; if disabled, the EPA logo will not appear.

4.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.

```
        Phoenix - AwardBIOS CMOS Setup Utility
              Advanced Chipset Features

  ▶ DRAM Clock/Drive Control    [Press Enter]      Item Help
  ▶ AGP & P2P Bridge Control    [Press Enter]    Menu Level ▶
  ▶ CPU & PCI Bus Control       [Press Enter]
    System BIOS Cacheable       [Enabled]
    Video RAM Cacheable         [Disabled]
    Init Display First          [PCI Slot]
    Select Display Device       [CRT]
    Panel Type                  [1024x768 18Bit]




  ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **DRAM Clock/Drive Control**

Scroll to this item and press <Enter> to view the DRAM Clock/Drive Control sub menu.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                       DRAM Clock/Drive Control
                                                    Item Help
    Current FSB Frequency                         Menu Level ▶ ▶
    Current DRAM Frequency
    DRAM Clock                    [By SPD]
    DRAM Timing                   [Auto By SPD]
  X SDRAM CAS Latency             [DDR/DDR22.5/ 4]
  X Bank Interleave               [Disabled]
  X Precharge to Active <Trp>     [4T]
  X Active to Precharge <Tras>    [07T]
  X Active to CMD <Trcd>          [4T]
  X REF to ACT/REF <Trfc>         [25T]
  X ACT <0> to ACT <1><TRRD>      [3T]
    Read to Precharge <Trtp>      [2T]
    Write to Read CMD <Twtr>      [1T/2T]
    Write Recovery Time <Twr>     [4T]
    DRAM Command Rate             [2T Command]
    RDSAIT mode                   [Auto]
  X RDSAIT selection              [03]

  ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

> **DRAM Clock**
> Use this item to adjust memory speed. Option By SPD (Serial Detect Presence) makes it possible to do an automatic selection.
> **DRAM Timing**
> Use this item to increase the timing of the memory. This is related to the cooling of memory.
> **SDRAM CAS Latency**
> When synchronous DRAM is installed, the DRAM timing determines the CAS latency's clock cycles. It is strongly recommended to keep this item at default value specified by the system designer.
> **Bank Interleave**
> Select 2-Bank or 4-Bank interleave for 64-Mb SDRAM.

Press <Esc> to return to the Advanced Chipset Features page.

● **AGP & P2P Bridge Control**

Scroll to this item and press <Enter> to view the AGP & P2P Control sub menu.
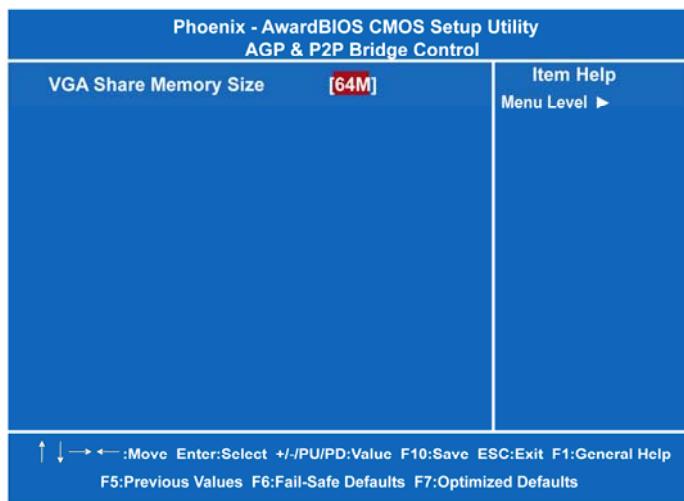
Press <Esc> to return to the Advanced Chipset Features page.

● **CPU & PCI Bus Control**

Scroll to this item and press <Enter> to view the CPU & PCI Bus Control sub menu.
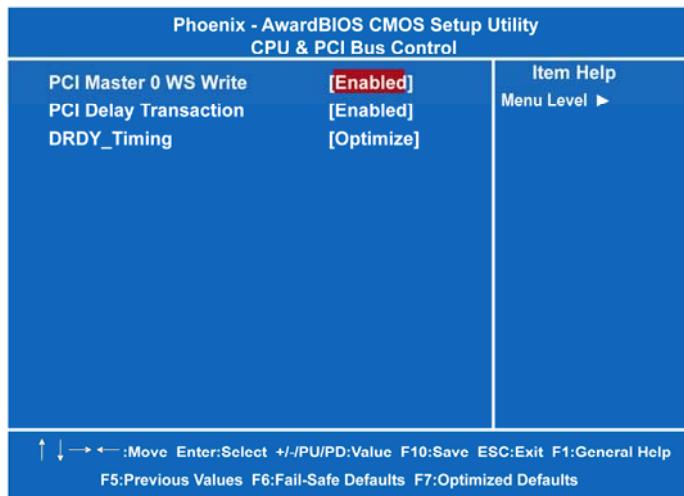
Press <Esc> to return to the Advanced Chipset Features page.

● **System BIOS Cacheable**
Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled".*
● **Video RAM Cacheable**
Use this item to enable or disable the video RAM cache.
● **Init Display First**
This item allows you to decide whether PCI Slot or AGP to be the first primary display card.

Press <Esc> to return to the Main Menu page.

4.8   Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.

```
               Phoenix - AwardBIOS CMOS Setup Utility
                        Integrated Peripherals
  ► VIA OnChip IDE Device      [Press Enter]      Item Help
  ► VIA OnChip PCI Device      [Press Enter]    Menu Level ►
  ► Super IO Device            [Press Enter]
  ► USB Device Setting         [Press Enter]




  ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```
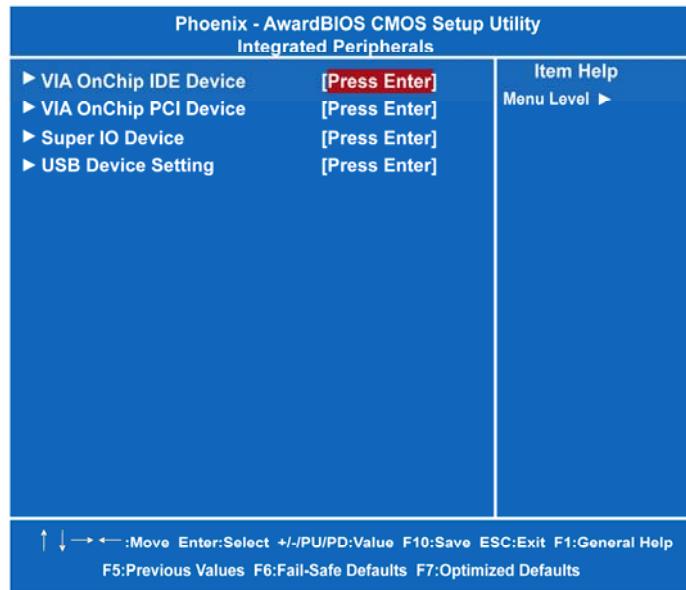
● **VIA OnChip IDE Device**

Scroll to this item and press <Enter> to view the VIA OnChip IDE
Device sub menu.
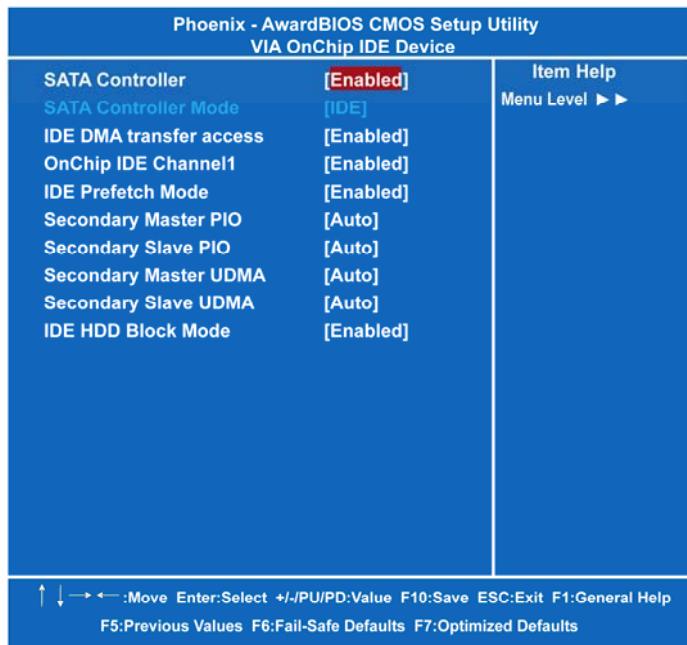
Press <Esc> to return to the Integrated Peripherals page.

● **VIA OnChip PCI Device**

Scroll to this item and press <Enter> to view the VIA OnChip PCI Device sub menu.
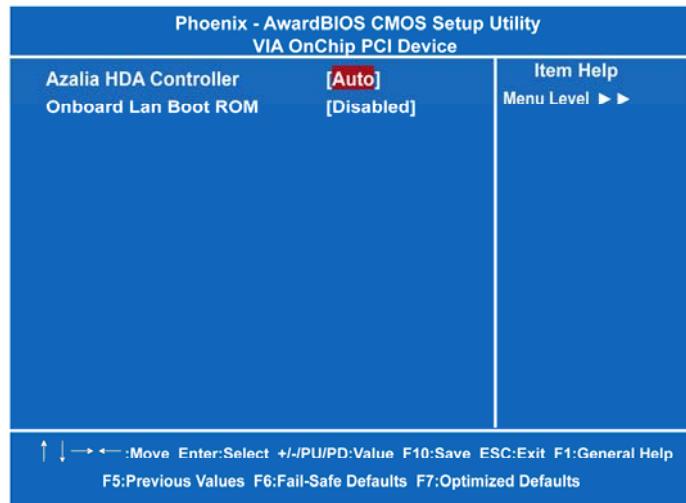
Press <Esc> to return to the Integrated Peripherals page.

● **USB Device Setting**

Scroll to this item and press <Enter> to view the USB Device Setting sub menu.

Press <Esc> to return to the Integrated Peripherals page, and press it again to the Main Menu.

4.9　Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Power Management Setup

 ACPI function              [Enabled]          Item Help
 ACPI Suspend Type          [S1<POS>]          Menu Level ▶
 Power Management Option     [User Define]
 HDD Power Down             [Disabled]
 Suspend Mode               [Disabled]
 Video Off Option           [Suspend -> Off]
 Video Off Method           [V/H SYNC+Blank]
 MODEM Use IRQ              [3]
 Soft-Off by PWRBTN         [Instang-Off]
 Ac Loss Auto Restart       [Off]
▶ Wake Up Events            [Press Enter]



 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **ACPI Function**
This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".

● **ACPI Suspend Type**
This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

　　　[S1 (POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts.
　　　[S3 (STR)] The S3 sleep mode is a lower power state where the information of system configuration and open

applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

● **HDD Power Down**
If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.

● **Suspend Mode**
After a selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	The System will never enter the SUSPEND mode.
1/2/4/6/8/10/20/30/40 Min/1 Hr	It defines continuous idle time before the system entering the SUSPEND mode. If any item defined in (J) is enabled and active, the SUSPEND timer will be reloaded.

● **Video Off Option**
This setting is used to control the mode in which the monitor will shut down. Setting options are:

Always On	Monitor remains on during power-saving modes.
Suspend → Off	Monitor blanked when system enters Suspend mode.
Susp, Stby→ Off	Monitor blanked when system enters either Suspend or Standby mode.
All Modes → Off	Monitor blanked when system enters any power saving.

● **Video Off Method**
This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values.
Blank Screen	The System only writes blanks to the video buffer.

- **Moden Use IRQ**

  If you want an incoming call on a modem to automatically resume the system from a powersaving mode, use this item to specify the interrupt request line (IRQ) used by the modem. You might have to connect the fax/modem to the board Wake On Modem connector for working this feature.

- **Soft-Off by PWR-BTTN**

  This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

Instant-Off	This option follows the conventional manner of system performance when turning the power to OFF. Instant-Off is a software power OFF sequence requiring the power supply button is switched to OFF.
Delay 4 Sec.	Upon the system's turning OFF through the power switch, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once.

● **Wake Up Events**

Scroll to this item and press <Enter> to view the Wake Up Events sub menu.

```
             Phoenix - AwardBIOS CMOS Setup Utility
                        Wake Up Event Detect

   PS2KB Wakeup Select          [Hot Key]          Item Help
   PS2KB Wakeup Key Select      [Any Key]        Menu Level ►
   PS2KB Wakeup Key Select      [Any Button]
   PowerOn by PCI Card          [Disabled]
   Modem Ring Resume            [Enabled]
   RTC Alarm Resume             [Disabled]
 X Date (of Month)              0
 X Resume Time (hh:mm:ss)       0 : 0 : 0




 ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

Press <Esc> to return to the Power Management page, and press it again to the Main Menu.

4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  PnP/PCI Configurations

  PNP OS Installed           [No]              Item Help
  Reset Configuration Data   [Disabled]     Menu Level ►
                                            Select Yes if you are
  Resources Controlled By    [Auto(ESCD)]   using a Plug and Play
X IRQ Resources              Press Enter     capable operating
                                            system Select No if
  PCI/VGA Palette Snoop      [Disabled]     you need the BIOS to
  Assign IRQ For VGA         [Enabled]      configure non-boot
  Assign IRQ For USB         [Enabled]      devices.

  ** PCI Express relative items **
  Maximum ASPM supported     [L0s&L1]
  Maximum Payload Size       [4096]


↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```

● **PNP OS Installed**
   Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The default value is *"No"*.

● **Reset Configuration Data**
   Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.

● **Resources Controlled By**
   The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all

interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

● **IRQ Resources**
When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:

1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is *"PCI/ISA PnP"*.

● **PCI/VGA Palette Snoop**
Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

● **Assign IRQ For VGA**
The Enabled item allows the BIOS to auto-route an IRQ for use by a VGA card.

● **Assign IRQ For USB**
It enables or disables IRQ allocation for the USB (Universal Serial Bus). Enable this if you are using a USB device.

** PCI Express relative items **

● **Maximum Payload Size**

When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

4.11 Frequency/Voltage Control

This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                 Frequency/Voltage Control
                                                Item Help
  CPU Clock Ratio              32 X           Menu Level  ►
  Auto Detect PCI Clk          [Enabled]
  Spread Spectrum              [Disabled]
  CPU Clock                    100MHz




  ↑ ↓ → ← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values  F6:Fail-Safe Defaults  F7:Optimized Defaults
```
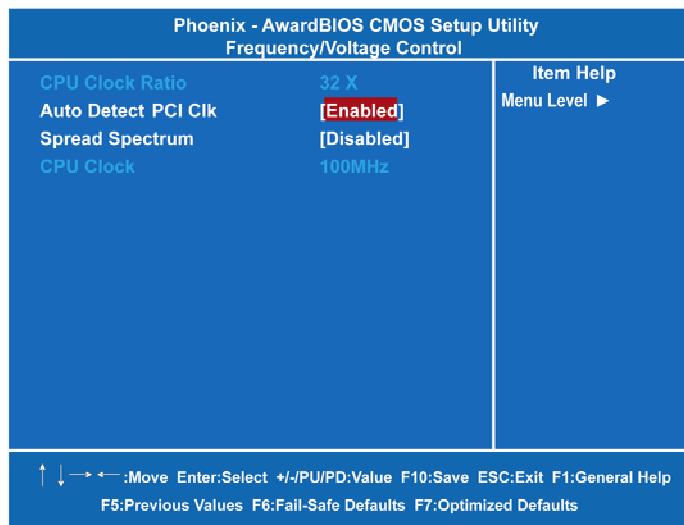
● **CPU Clock Ratio**
 Use this item to select the CPU's frequency.
● **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).
● **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

Press <Esc> to return to the Main Menu page.

4.12 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.
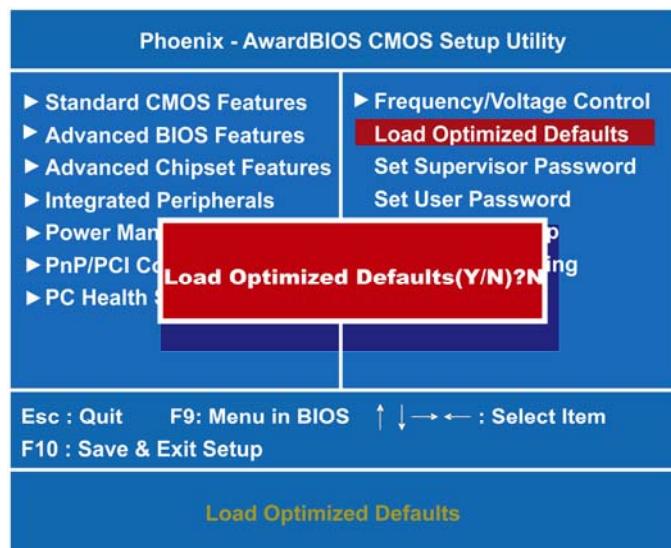
To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

4.13 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

4.14 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.
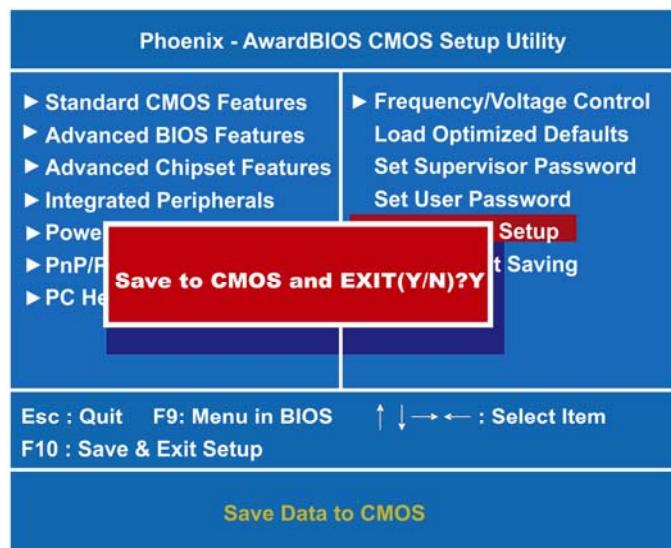
4.15 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.
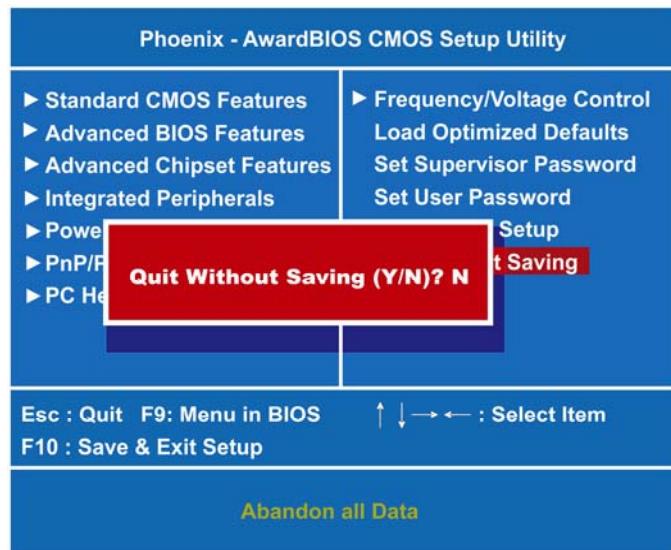
MEMO

A p p e n d i x
Watch Dog Timer

Watchdog Timer Setting

The watchdog timer makes the system auto-reset while it stops working for a period. The integrated watchdog timer can be set up as system reset mode by program.

Timeout Value Range
   1 to 255
   Second

Program Sample
Watchdog timer sets up as system reset with 5 second of timeout.

2E, 87	
2E, 87	
2E, 07	
2F, 00	Logical Device 0
2E, 2B	Set WDT Funtion Enable
2F, 00	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F3	Set Second
2F, N	N = 0 or 4
2E, F4	Set Value
2F, M	M = 00 ~ FF

Using the Watchdog Function

Start
↓
Un-Lock WDT: **O 2E 87 ; Un-lock super I/O**
                                        O 2E 87 ; Un-lock super I/O
↓
Select Logic device:
                                        O 2E 07
                                        O 2F 00
Set WDT Funtion:
                                        O 2E 2B
                                        O 2F 00
Select Logic device:
                                        O 2E 07
                                        O 2F 08
↓
Activate WDT: **O 2E 30**
                                        O 2F 01
↓ Set Second or Minute:
                                        O 2E F3
                                        O 2F N   **N=00 or 04(See below table)**
↓
Set base timer: **O 2E F4**
                                        O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓
WDT counting
↓
re-set timer: **O 2E F4**
                                        O 2F M ; M=00,01,02,…FF(See below table)
↓
IF No re-set timer   **:WDT time-out, generate RESET**

IF to disable WDT   **:O 2E 30**
                                        O 2F 00 ; Can be disable at any time

M	N=0	M	N=0	M	N=0	M	N=4
02	1sec	33	50sec	B5	180sec	11	992sec
03	2sec	38	55sec	BF	190sec	22	2012sec
04	3sec	3D	60sec	C9	200sec	33	3032sec
05	4sec	42	65sec	D3	210sec	43	3992sec
06	5sec	47	70sec	DD	220sec	54	5012sec
07	6sec	4C	75sec	E7	230sec	65	6032sec
08	7sec	51	80sec	F1	240sec	75	6992sec
09	8sec	56	85sec	FB	250sec	86	8012sec
M	**N=0**	**M**	**N=0**	**M**	**N=4**	**M**	**N=4**
0B	10sec	65	100sec	05	272sec	97	9032sec
10	15sec	6F	110sec	06	332sec	A7	9992sec
15	20sec	79	120sec	07	392sec	B8	11012sec
1A	25sec	83	130sec	08	452sec	C9	12032sec
1F	30sec	8D	140sec	09	512sec	D9	12992sec
24	35sec	97	150sec	0A	572sec	EA	14012sec
29	40sec	A1	160sec	0B	632sec	FB	15032sec
2E	45sec	AB	170sec	0C	692sec		

MEMO